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REVIEW OF A COMPUTER HARDWARE ACQUISITION FOR THE NATIONAL OCEA--ETC(U)
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GAO/AFMD-81-92

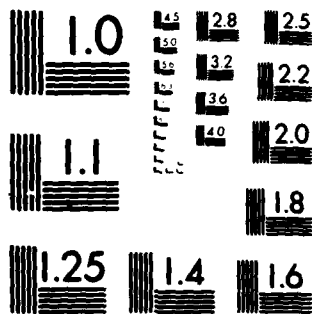
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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON D.C. 20548

LEVEL II

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SEPTEMBER 25, 1981

The Honorable Jack Brooks
Chairman, Committee on Government Operations
House of Representatives

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Dear Mr. Chairman:

Subject: Review of a Computer Hardware Acquisition for the
National Oceanic and Atmospheric Administration in
Boulder, Colorado (AFMD-81-92)

In your January 22, 1981, letter (encl. I) you asked us to re-
view the recent acquisition of computer hardware for the National
Oceanic and Atmospheric Administration (NOAA) in Boulder, Colorado.
Your committee had received information that the purchase was un-
warranted because (1) the justification data were manipulated and
(2) the present computers were underutilized and mismanaged.

In discussion with your office we agreed to address these
points:

- (1) The computer hardware procurement history of NOAA's
Environmental Research Laboratories (ERL) and whether
ERL was following a pattern of noncompetitive acquisi-
tions.
- (2) The justification for the recent computer hardware ac-
quisition for the Boulder computer center.
- (3) The management of the Boulder computer center.
- (4) The bid protest by the third party maintenance vendor,
Computer Maintenance Technologies, Inc.
- (5) ERL's planning for a fiscal 1982 competitive procurement.

We briefed your office on the results of our review and were
requested to furnish a report on our findings. In summary, we
found:

- This study found:*
- (1) The Boulder computer center is not following a pattern of
noncompetitive acquisitions;
 - (2) The recent sole-source procurement of computer hardware ap-
pears to be justified as an interim bridge to a fully com-
petitive procurement in 1982;

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- (3) The Boulder computer center does not appear to be mismanaged;
- (4) The bid protest by Computer Maintenance Technologies, Inc., was rejected by the Department of Commerce, and the company chose not to pursue the protest further with us,
- (5) ^{and} --We have serious concerns about the adequacy of ERL's planning for their future computer resource needs.

Because of our concerns about the adequacy of ERL's planning for their future computer resource needs, your committee may wish to consider asking the Department of Commerce to defer procurement actions pending completion of our review of the adequacy of ERL's computer resources management plan.

OBJECTIVES, SCOPE, AND METHODOLOGY

Since the objective of our review was to provide information on the points raised by your committee, we concentrated on those areas. We made extensive use of information gathered at the Boulder computer center as part of our 1980 review of NOAA automatic data processing (ADP) planning. 1/

To determine the Boulder computer center's procurement history we interviewed ERL and NOAA headquarters personnel responsible for ADP planning. We also examined relevant documents, including internal ERL correspondence as well as communications between ERL, NOAA, and the Department of Commerce.

We evaluated the justification for the recent computer hardware acquisition by concentrating on the merit of the information received by your committee indicating the purchase was unwarranted. This evaluation included two interviews with the source of the adverse information. We also interviewed ERL technical and management personnel at the Boulder computer center as well as an onsite vendor software specialist.

In addition, we reviewed pertinent documents, including computer-generated utilization reports used by the computer center for billing and accounting both before and after the recent procurement. We reviewed computer center reliability and performance-related documents as well as internal ERL correspondence and memorandums regarding the acquisition.

Our review of the management of the Boulder computer center was based on interviews with ERL headquarters and computer center management personnel. We obtained additional information on computer center management practices and staff attitudes, and reviewed

1/"Improvements Needed in NOAA's Long-Range ADP Plans," CED-80-136, Aug. 29, 1980.

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internal ERL memorandums from users regarding computer center management.

Our evaluation of the adequacy of ERL planning for its 1982 competitive procurement was based primarily on a review of ERL internal documents and correspondence including computer requirements justifications prepared by the laboratories. We also conducted interviews with ERL personnel responsible for computer planning.

ERL PROCUREMENT HISTORY

We found that ERL has not been following a pattern of non-competitive sole-source procurement. ERL has, until the recent sole-source acquisition of the Control Data Corporation (CDC) Cyber 170/750 for the Boulder computer center, satisfied its general purpose computing needs by competitively procuring computer systems or by obtaining excess computer systems from other Government agencies. ERL also purchases computer time from universities and government facilities.

The Boulder computer center is one of four general purpose computing centers operated by ERL. The Boulder center is the only one of the four that is shared among more than one laboratory. The other three computer centers are:

- Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey, which operates a competitively procured Texas Instruments Advanced Scientific Computer, now being replaced by a competitively procured CDC Cyber 205.
- National Severe Storms Laboratory in Norman, Oklahoma, which operates a Systems Engineering Laboratories 8600 computer obtained as excess equipment from another Government agency in 1972.
- Atlantic Oceanographic and Meteorological Laboratory in Miami, Florida, which operates a Univac 1108 computer obtained as excess equipment in 1979. This laboratory also makes extensive use of the Boulder computer center as well as purchasing time on the Air Force Weapons Laboratory Cray-1 computer in Albuquerque, New Mexico.

The Boulder computer center operates in a service center environment providing computing services to 13 ERL components in and out of Boulder, the National Bureau of Standards Boulder Laboratories, the National Telecommunications and Information Administration Boulder Laboratories, the Environmental Data and Information Service in Boulder, and to a small number of other Government agencies and Government contractors in the Boulder area. The Boulder computer center has performed seven computer system procurements since 1961. Although it has stayed with the Control Data Corporation product line for most of its history, the current sole-source procurement is the only one of that type. The others

consisted of three competitive procurements and three obtained from the General Services Administration excess list. In 1967, one of its competitively procured computers was upgraded by the vendor to a more powerful computer system.

RECENT ACQUISITION OF COMPUTER HARDWARE
APPEARS TO BE JUSTIFIED

The recent sole-source procurement of computer hardware to replace two aging, unreliable computers at the Boulder computer center appears to be justified as an interim procurement, although the interim computer hardware is currently underutilized. Applicable procurement regulations for the interim procurement were followed and nothing we found substantiated the allegation that the justification data for the procurement were manipulated.

Applicable procurement regulations
were followed in justifying
the interim procurement

The General Services Administration on March 14, 1980, provided guidance to its Office of Agency Services and Procurement for the handling of agency procurement requests involving augmentation or replacement of installed ADP equipment. This guidance was issued pending clarification of existing procedures, including the removal of the interim upgrade 1/ provisions in Federal Property Management Regulation 101-35.206(c)(4). According to that provision, now rescinded, if equipment for an interim upgrade is acquired noncompetitively, the agency should replace the equipment through a competitive procurement within 2 years of the initial acquisition. 2/ The guidance treats agency procurement requests for sole-source, specific make and model, or compatible equipment on an individual basis, rather than as previously prescribed in the regulation.

The General Services Administration granted ERL a delegation of procurement authority in September 1980. ERL's procurement request indicated that it would competitively replace the sole-source computer and estimated the system life at 3 years.

1/Interim upgrade means the acquisition of additional and/or augmentation of installed components or subsystems of ADP equipment or systems on a temporary basis, pending a fully competitive reprocurement, to meet unforeseen, urgent, data processing requirements.

2/On Jan. 5, 1981, the General Services Administration published a revised Federal Property Management Regulation 101-35.2 which deleted this requirement. See 46 F.R. 1213-1219, Jan. 5, 1981.

ERL's justification, prepared in accordance with this guidance, was based on the following factors:

- Data processing was essential to the agency mission (95 percent of ERL's computer usage is scientific processing in support of its research and development mission) and there existed an urgent need to replace its aging, unreliable computer systems.
- The procurement was necessary for economy and efficiency (scientists' time estimated at \$675,000 per year was being wasted by slow turnaround time and inadequate processing capability).
- A required conversion cost study prepared by ERL and approved by the Federal Conversion Support Center showed it would cost \$9.9 million to convert to a noncompatible system.

ERL further justified this sole-source acquisition as a bridge system until action can begin on ERL's long range plan for a series of competitive acquisitions beginning in fiscal 1982. NOAA has fully supported a budget initiative for fiscal 1982 to support this long range plan.

Justification data does not appear to have been manipulated

Your committee received information stating that the sole-source procurement may have been unwarranted, in part because the justification data had been manipulated. A key point in the information provided to the committee was that:

"NOAA/ERL's computer operations management was fraudulent in its omission of the data that would have shown one of the two CDC 6600 computers spending 61 percent of its 'total CPU usage time' running 'do nothing' maintenance diagnostic programs during the Jan/March 80 time period used in NOAA's justification."

The Department of Commerce justification material furnished to the General Services Administration requesting a delegation of procurement authority did not use the data cited by the committee source.

Computer center records substantiate that during the January thru March 1980 time period cited, one CDC 6600 spent 61 percent of its total processing time running a category that includes maintenance diagnostic programs. According to computer center officials, the high percentage was because this second central processing unit was recently installed and was still having technical problems. These officials and a Control Data system software analyst stated it was common practice when operating with 6600s,

which lack basic error detection capabilities such as parity checking, to run maintenance diagnostic routines concurrently with user jobs when experiencing hardware problems. They said the newly installed unit could be making errors affecting user output and, if the maintenance programs were not running, the operator and users might be unaware of the problem.

During the January thru March period cited, the newly installed central processing unit was in a test mode with its usage not being billed to users. After the system became operational in July, users were billed and the percentage of time spent running maintenance diagnostics dropped substantially.

Present computer system is underutilized

The replacement CDC Cyber 170/750 system is underutilized. This underutilization resulted from an underestimation of its capability. ERL used several sources to determine that the Cyber 170/750 has approximately 2.25 to 4.00 times the computing power of a single CDC 6600 computer system. In choosing the Cyber 170/750 to replace its two CDC 6600 computer systems, ERL selected the lower figure of 2.25. However, because of the nature of ERL's workload, the Cyber 170/750's computing capacity is on the higher end of the range. ERL had estimated that the computer would be saturated in June 1981; however, because of the underestimation of computer capacity this has not occurred. ERL computer usage data for July 1981 indicated that the central processing unit was busy 36 percent of the time. Accordingly, ERL is now selling excess time to other Government agencies and considering some modification of its 1982 competitive procurement plan.

COMPUTER CENTER DOES NOT APPEAR TO BE MISMANAGED

In our opinion, the Boulder computer center does not appear to be mismanaged. Since early 1980, the current computer center management has taken a number of positive steps to improve the center's operations. These steps include:

- Better control of operational procedures through daily operational review meetings.
- Acting to foster future competition by moving the computer center to standard off-the-shelf system software.
- Improving user utilization of the computer system by establishing user-oriented training courses.

COMPUTER MAINTENANCE TECHNOLOGIES, INC., DID NOT PURSUE BID PROTEST

Computer Maintenance Technologies, Inc. (CMTI), filed bid protests with the Department of Commerce and us on December 2 and 3,

1980, respectively. The bid protests involved a clause in ERL's contract with Control Data Corporation that provided:

"The Government shall take every precaution to prevent the unauthorized duplication or disclosure of Software Programs. Authorization for duplication may be obtained only from the Contractor."

CMTI stated it had been their experience that Control Data Corporation would not allow third party maintenance vendors access to computers using CDC software nor to the software listings. CMTI stated such access was sometimes necessary to facilitate the repair of Government-owned computer peripheral equipment for which CMTI still had maintenance responsibility. They requested a ruling on this clause so that third party maintenance vendors, including CMTI, could continue to successfully bid on maintenance contracts for Government-owned Control Data equipment.

The Department of Commerce reported that it is a basic principle in Federal procurement that when the Government buys a proprietary commercial product developed at private expense it does not obtain unlimited rights to publicly disclose the operation of that product unless those unlimited rights are specifically agreed to in the contract. We agree with this determination.

In its report on the protest the Department of Commerce determined the contract clause questioned was proper and recommended that we deny the protest. CMTI did not respond to our request as to whether it wanted to pursue the protest further. Accordingly, we consider the protest closed.

GAO CONCERN WITH ERL 1982
COMPETITIVE PROCUREMENT PLANNING

ERL has prepared a long term plan for meeting its automatic data processing requirements for fiscal 1982 through 1988. NOAA has approved this plan and is supporting the related budget requests of \$2.9 million a year for 7 years (\$20.3 million) beginning in fiscal 1982. The plan envisions a competitive procurement of a mixture of seven mid-range systems to process small jobs plus a single large system to process large computer modeling jobs.

We are seriously concerned that ERL's computing requirements have not been properly determined. ERL laboratories, which lack ADP planning expertise, were tasked with determining their future computing requirements with only minimal guidance. Consequently, ERL developed its requirements in system terms, with an emphasis on workload and hardware, rather than user requirement terms. User requirements are more closely related to the functions to be performed.

In our opinion, user requirements must be clearly and accurately defined if they are to be effective in the resource planning

process. They must also be described with service levels in mind, for instance, timeliness, accuracy, cost, and reliability of the data processing function.

User requirements should reflect the functional needs of the user, stated in terms the user understands (data volume, response time, average record length) and not system requirements (memory, central processing unit time, tape) which define the computing environment. In user requirements, quantities are stated in units that measure user tasks, not in computer system terminology. The accuracy of computer resource selection is contingent upon a comprehensive understanding of user requirements.

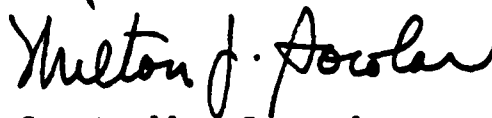
Because computing requirements form the basis for proper systems selection, it would be very easy to end up with systems that do not meet ERL's real needs. To reduce this risk, your committee may wish to consider requesting the Department of Commerce to defer procurement actions until we have reviewed the adequacy of ERL's computer resources management plan.

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At your request, we did not obtain comments on the matters discussed in this report.

As agreed with your office, we plan no further distribution of this report until 30 days from its date. At that time, we will send a copy to the Director of the Environmental Research Laboratories and make copies available to other interested parties.

Sincerely yours,



Comptroller General
of the United States

Enclosure

Congress of the United States
Committee on Government Operations
House of Representatives

January 22, 1981

Honorable Elmer B. Staats
Comptroller General of the United States
Washington, D.C. 20548

Dear General:

Information of a serious nature has been forwarded to the Committee concerning the acquisition of computer hardware for the National Oceanic and Atmospheric Administration (NOAA) of the Department of Commerce at Boulder, Colorado. The information indicates that a recent procurement was unwarranted because (1) the justification data was manipulated, and (2) the present computers are underutilized and mismanaged.

Notwithstanding the pending legal determination of the bid protest filed by Computer Maintenance Technologies, Inc. on December 3, 1980, I request that GAO undertake a review of this computer acquisition. A determination should be made if the acquisition was, indeed, justified and whether the NOAA is managing its computer center at Boulder properly. I would also like GAO to include its evaluation of the protest in its report. Dan Soranno of the Community and Economic Development Division has done similar ADP reviews for the Committee in the past and it would be helpful if he could be assigned this work.

With best wishes, I am

Sincerely,



JACK BROOKS
Chairman

